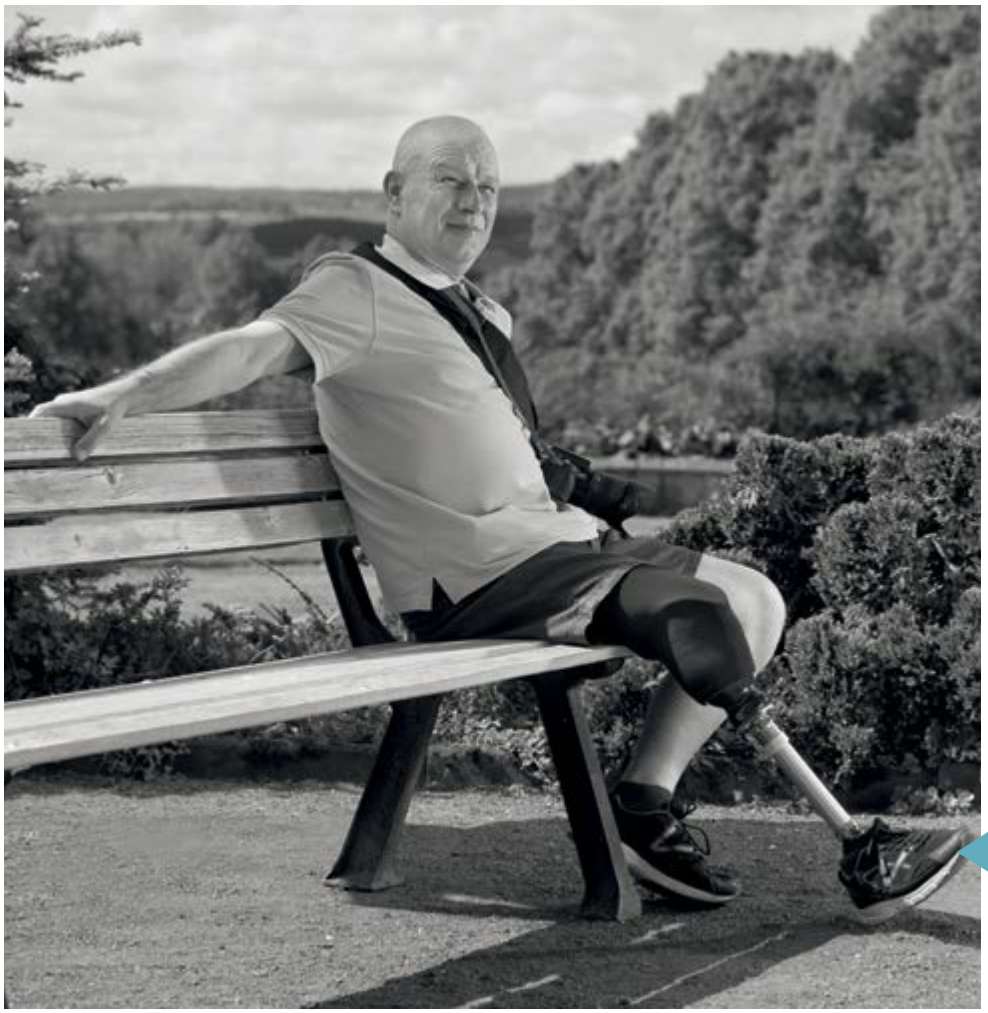
ottobock.

DVS - Dynamic Vacuum

Simple Solutions

Quality for life

For Practitioners



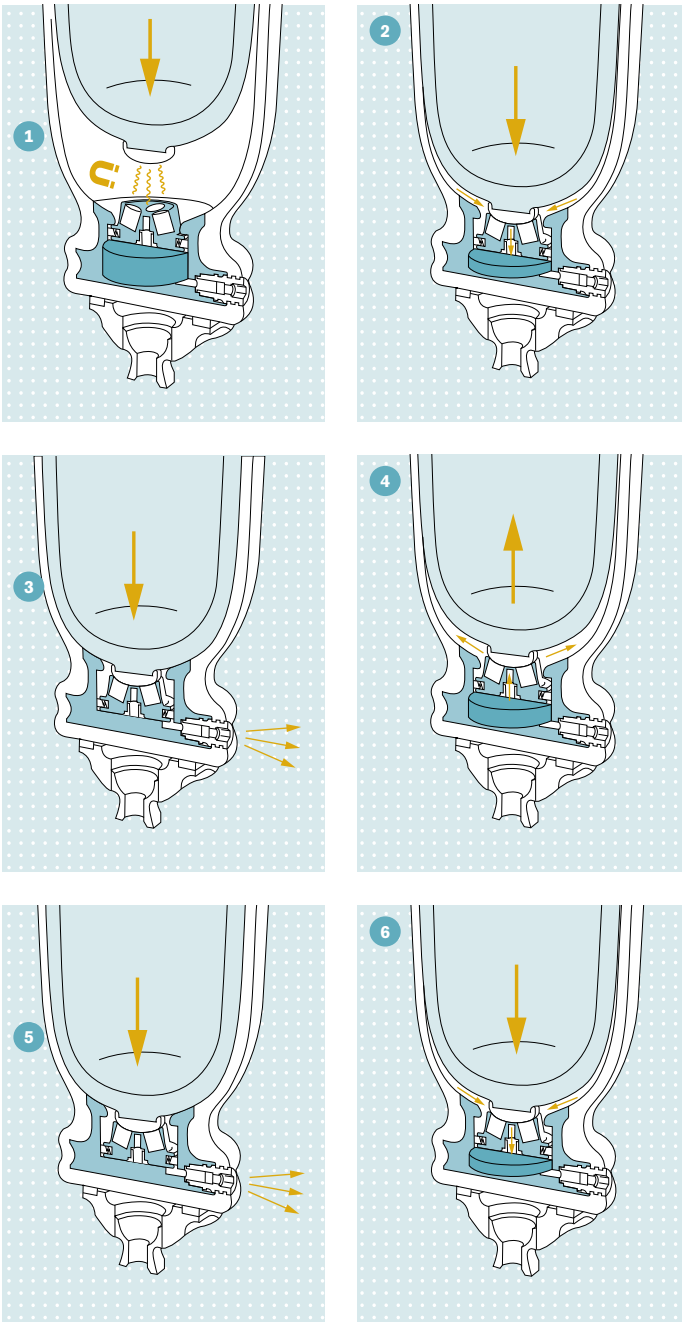
The Dynamic Vacuum System (DVS) is bridging the gap between valve and Harmony socket technology. Integrating innovative design with simplicity, the DVS reduces the movement between the limb and socket associated with limb volume fluctuations.

Advantages

Dynamic
The DVS generates vacuum during walking and maintains this elevated vacuum in both swing and stance phase. This sets it apart from passive systems, such as valve, where a vacuum is only generated in the swing phase. Increased suspension forces and intimate fit enhances the user's perception of the ground beneath them. Dynamically, it adjusts to the user's activity level. If the user increases their activity, the system's pumping output increases until the pistoning in the socket is reduced to a minimum and a higher vacuum equilibrium is reached. What's more, its intimate fit is ideal for combinations with state-of-the-art feet.

Simple
During the development process, we focused on ensuring that you can fabricate the DVS using any common plaster cast technique. Patient fittings are made easy when you can simply integrate the system into the socket using familiar fabrication procedures. Due to its small size, it's also easy to achieve good cosmetic results when integrating the Dynamic Vacuum System into a prosthesis. For this reason, no certification is required. However steps for fabrication and technical videos are available.

Functionality



How the Dynamic Vacuum works
After the user steps into the socket, magnetic coupling occurs between the liner and the piston (Fig. 1). During the swing phase, the piston moves in the proximal direction due to the centrifugal force. The difference in pressure between the cylinder chamber and the inside of the socket results in a flow of air from the socket to the cylinder chamber. A one-way valve in the piston ensures that the air does not flow back into the socket (Fig. 2).

When the user places their weight on the prosthesis in the stance phase, the air is ejected from the cylinder chamber (Fig. 3). Another one-way valve in the body of the cylinder prevents the air from flowing back. A vacuum develops after just a few steps. And, unlike in a valve system, this vacuum occurs not only in the swing phase, but also in the stance phase. Pistoning in the socket is reduced to a minimum (Fig. 4 – 6).

The Dynamic Vacuum System generates a vacuum level which adjusts itself dynamically to the increase in movement. With faster walking and higher forces the vacuum will increase accordingly.

With the Dynamic Vacuum System, an active vacuum of up to 6-10 inHg (250 mbar) is produced in both the swing and the stance phases. In comparison, the user generates up to 4.5 inHg (150 mbar) with a passive suction system, but only in the swing phase.

The DVS is designed to suit a variety of lifestyles and daily activities. Providing comfort and stability the Dynamic Vacuum System offers confidence with each step so that your patient can focus on what they are doing and not their prosthesis. With the winning combination of key components the DVS can go almost anywhere!

Winning combination

New!

4R220
DVS Pump

+

New!

6Y94
DVS Liner (TPE)

+

New color!

ProFlex
Sleeve

4R220=1 DVS Vacuum pump, non-weight-bearing
This pump option is used when offset or contracture angles do not allow fitting of the standard 4-Hole connector. A separate connection plate is required and not included.

4R220=1

Winning combination

6Y94 DVS liner is made from TPE (Thermoplastic Elastomer) and was specifically developed for the Dynamic Vacuum System. Containing Medical Grade Mineral white oil for skin conditioning, the liner geometry is thicker anterior and thinner posterior for protection on boney areas and ease of flexion behind the knee. The liner establishes a direct connection to the vacuum pump with its distal connector.A magnetic coupling occurs between the liner and the pump's piston for this purpose.

6Y94 Sizing chart

	4 cm from distal end		30 cm from distal end	
	Min.	Max.	Min.	Max.
S	6 in (15 cm)	8.5 in(22 cm)	8 in (20 cm)	10.5 in (27 cm)
M	7 in (18 cm)	10 in(26 cm)	9 in (22 cm)	14 in (36 cm)
MP	8 in (20 cm)	11 in (28 cm)	13 in (33 cm)	20 in (50 cm)
L	10 in (25 cm)	13 in (33 cm)	14 in (36 cm)	21.5 in (55 cm)
LP	11 in (28 cm)	15.5 in (40 cm)	15.5 in (40 cm)	23.5 in (60 cm)
XL	13 in (33 cm)	17.5 in (45 cm)	17 in (43 cm)	25.5 in (65 cm)

- Measure the residual limb circumference 4 cm and 30 cm above the distal end of the residual limb and select the liner size which corresponds to this measurement, or the next smallest size.

ProFlex sealing sleeve

We recommend using the ProFlex sealing sleeve for sealing the vacuum system. The ProFlex sleeves are preflexed for easy bending and have a patella relief for less pressure.The distal end has strong taper design for good connection and seal on the socket. The sleeves are available in 2 different proximal lengths and also in 3 colors including the **new** Tan ProFlex Plus.

Technical Data - Dynamic Vacuum Pump

Article number	**4R220**
Description	Dynamic Vacuum Pump for transtibial fitting
Max. body weight	330 lb / 150 kg
System height	1.5" (37 mm)
Weight	7.4 oz (210 g)
Spare parts	4X320 piston, 4X339 fixation ring, 4X322 valve bushing for lamination adapter, 4X326 dummy set, 4X338 wrench, 4X314 spacer plate

Technical Data - DVS liner

Article no. (order example)		
Reference no.	=	Size
6Y94	=	M